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ABSTRACT

The Beginning Teacher Evaluation Study, Phase II, was a research project on effective teaching behavior--what teachers do that significantly affects what and how pupils learn. The purposes of Phase II were to (1) develop an assessment system for measuring teacher and student behaviors and other factors which could influence each of them and their interrelationships and (2) generate hypotheses about the interrelationships among teacher and pupil behaviors and related factors. Subjects were 41 second grade and 54 fifth grade experienced teachers in eight school districts in California. Teacher reports of their instructional activities and procedures were used as one source of descriptive information about classrooms. Different kinds of "scores" from these reports were employed as measures of teaching performance for the analyses done in the study. (RC)

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THE REPORTS OF TEACHERS ABOUT THEIR MATHEMATICS AND READING INSTRUCTIONAL ACTIVITIES

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THE DIARIES AND OVERVIEWS: BACKGROUND

The overall purpose of Phase II of the Beginning Teacher Evaluation Study was to examine the "relationships between the classroom behavior of elementary school teachers and the outcomes achieved by students in their classrooms." Phase II of the study was devoted to the generation of hypotheses and instruments which could be useful in that effort. The structured Work Diaries were intended to provide a vehicle for teachers to describe their programs in reading and mathematics directly. We were interested in whether or not teacher reports of their instructional activities and practices would be accurate and valid sources of information about classrooms.

The Work Diaries were one of several approaches to describing teaching performances in the project. The study of teaching performances was also addressed by direct observation and by videotaping in the classrooms. Two types of "Teaching Performance" variables were derived from direct observations in classrooms, observations gathered with a behavior recording system and a category system. The third type of Teaching Performance variables was derived from the Work Diary scores. Scores were aggregated from the several instruments teachers used to describe their instructional activities. The data were provided from five instruments:

1. The Reading Program Overview was intended to provide a summary of the teacher's reading program for the entire school year. It was completed once by teachers.
2. The Reading Work Diary was designed to reflect the instructional process during one school week. The diary was completed twice.

3. The Mathematics Program Overview was intended to provide a summary of a teacher's mathematics program for the entire school year. It, like the Reading Program Overview, was completed once by the teachers.

4. The Mathematics Work Diary was parallel to the Reading Work Diary and was designed to reflect the instructional process during one school week. The Diary was completed twice at the same time that the Reading Diary was used. Both were completed during two target weeks which were eight calendar weeks apart.

5. The Reading and Mathematics Work Diary for Paraprofessionals and Other Teaching Adults in the Classroom also covered a one week time period and was intended to describe the functions of adult assistants in the classroom. It was completed twice by each adult assistant in a classroom at the time the Reading and Mathematics Work Diaries were completed by teachers.

The information from the battery was organized to indicate, by grade level and within subject areas, the academic emphasis, the quality of the teaching methodology, the complexity of the organizational structure, and the variety and types of instructional materials used.

Because the instruments were intended for teachers to use with little or no direct project staff support, it was essential that both the structure and content be understandable and sensible to the teachers. Teacher review was an integral part of developing the Diaries. Two different groups of participating teachers reviewed the Reading Diary at different stages of the developmental process.

Teachers were asked to complete the Reading and Mathematics Diaries twice during the spring of the data gathering year. Ninety-four of the 95 teachers returned the first set of Diary materials, and 93 returned the second set. Eighty-seven Diaries from other teaching adults were returned.

RESULTS

Teacher's Descriptions of Their Activities and Pupil Outcomes

The information was organized to indicate, by grade level and within subject areas, the academic emphasis, the complexity of organizational structure, and the variety and types of instructional materials used. The accuracy of sections of the teacher reports was tested against observational information from the project classrooms and related to pupil skill growth in reading and mathematics.

Academic Emphases

Academic emphases included three general information categories: how much time teachers reported spending in preparing for and teaching reading and mathematics skills; how frequently teachers reported teaching specific reading and mathematics skills; and, the specific skills in reading and mathematics that teachers reported they did not plan to teach. Some of the more interesting results were:

- Second grade teachers spent more time preparing for and teaching reading than did fifth grade teachers.
- Fifth grade teachers spent more time preparing for and teaching mathematics than did second grade teachers.
- The amount of total teacher preparation time had no relation to pupil skill growth in mathematics and an inverse relation to pupil skill growth in reading. Greater amounts of preparation time were associated with poorer reading comprehension skills for fifth grade pupils.

- The amount of direct teaching time had no relationship to pupil skill growth in mathematics but did relate to second grade pupil skill growth in decoding.

- There was greater grade level variation in time spent teaching specific reading skills than there was in the teaching of specific mathematics skills.

- Second grade teachers, as would be expected, spent more absolute and proportional time teaching decoding and vocabulary skills than did fifth grade teachers.

- Both second and fifth grade teachers spent more time teaching more generic reading comprehension and reading application skills than they did teaching more specific decoding and vocabulary skills.

- Greater amounts of time spent teaching the more specific decoding and vocabulary reading skills to fifth grade pupils was associated with poorer pupil performance on the more generic reading tasks, comprehension application and achievement.

- The time second grade teachers reported spent in teaching specialized skills in mathematics was negatively related to pupil growth in computation skills, and positively related to concept skill growth.

The time teachers spent teaching specific reading and mathematics skills in relationship to pupil performance suggests a variety of research tasks which might focus on the identification of optimal ranges of time for teaching specific skills to pupils in classrooms with a variety of skill configurations. Our data suggest, for example, that fifth grade teachers who emphasize basic decoding and vocabulary skills during reading instruction may do so at the expense of pupil skill growth in comprehension skills. The time teachers reported spending in preparing for and teaching reading or mathematics skills were the basis for the combined category, WD-1.

The quality of the teaching methodology. Teachers were asked to describe the teaching strategies, pupil activities, and materials used both for skills they introduced and reviewed during a given week. Their responses were rated. The "scores" became the combined category WD-3.

Neither score by itself related to pupil skill growth at the second grade level; one related to pupil skill growth in fifth grade reading.

The reported frequency of reading skills taught. Teachers were asked to check skills that they had "introduced" or "reviewed" during each of the two weeks the Diaries were maintained, in other words, skills they had actually taught. Teachers were also asked to indicate in the Program Overviews which specific skills would not be taught during the school year, either because "pupils already know these skills" or "these skills are taught at a higher level." The frequency of skills taught and not taught provided the basis for the combined category score WD-2.

- The number of skills taught had little proportional relationship to the time spent teaching within a skill area. Second grade teachers, for example, reported spending about twice as much time teaching decoding skills as did fifth grade teachers. The numbers of actual skills taught, however, do not appear that different (ten skills and eight skills).

- As was the case in time spent, there was greater grade level variation in number of skills taught in reading than there was in mathematics.

But where the number of skills taught differed it made a difference in pupil skills, particularly in mathematics.

- The number of specific skills taught related to pupil skill growth in mathematics at both grade levels, and was particularly important for second grade pupils.

- The number of teachers who did not plan to teach specific skills was relatively small in both reading and mathematics. But the decision not to teach certain skills related to pupil outcomes in several instances. For example, the decision not to teach certain decoding and vocabulary skills by a relatively small proportion of second grade teachers was related to the poorer decoding and vocabulary skill growth of their pupils.

The Complexity of the Organizational Structure in the Classroom

Organizational structure included two general types of information about the project classrooms. Teachers reported how they grouped children for reading and mathematics instruction, and what proportion of the pupils were taught reading or mathematics only by themselves. The ratio of teaching adults to children was also determined for both subject areas. These variables became the basis for the combined category of teaching performances called WD-4.

- Pupils were grouped differently for reading and mathematics instruction. Simultaneous instruction of all pupils was the most common pattern used for mathematics instruction, and grouping by general reading level was the most common for reading instruction.

- Grouping practices did not relate to fifth grade pupil achievement in mathematics. However, they did relate to several kinds of pupil achievement in reading and in second grade mathematics. For example, grouping by general reading level, the most common convention, related positively to second grade pupil skill growth in application skills and negatively to decoding skill growth for fifth grade pupils.

- Few teachers reported individualized instruction as their preferred organizational mode.

- Individualized reading instruction was associated with poorer second grade pupil performance on reading application tasks, but individualized mathematics instruction was associated with second grade pupil growth in mathematics skills.

- More fifth grade pupils were taught reading and mathematics exclusively by their teacher than were second grade pupils.

- Second grade teachers utilized up to six teaching adults during reading instruction, and up to five during mathematics. Fifth grade teachers who shared teaching or preparation responsibilities did so with a maximum of one or two other adults.

- Pupil skill growth in reading, particularly that of second grade pupils, was associated with the proportion of pupils taught exclusively by their teacher. No such association was evident for mathematics instruction.

The generalization that the percentage of pupils taught exclusively by the teacher related to reading skill growth at both grade levels was an intriguing finding. A variety of teaching configurations was represented in the sample: team teaching, multiple level, nongraded and open classrooms. A variety of human and school resources was available to some teachers: aides, student teachers, volunteers, reading specialists and learning laboratories. Under the circumstances (particularly in the case of the younger pupils) the simple generalization that pupil skill growth in reading may relate to the proportion of pupils taught exclusively by the teacher should be studied further. Although the data gathered from the paraprofessionals and other teaching adults was not detailed for this report, it is of considerable interest to note that the Work Diary variables associated with other teaching adults were consistently and significantly related to lack of pupil growth in reading and mathematics skills.

The Variety and Types of Instructional Materials Used in Reading and Mathematics Programs

Teachers were asked to approximate the percentage of their reading and mathematics programs in which they used the types of materials listed. The teachers were provided with a list of twelve different types of reading materials and ten different types of mathematics materials. Space was provided to specify the exact materials used and to indicate any types not included in the lists.

- Patterns of reading materials usage varied between second and fifth grade. Second grade teachers, for example, used basal readers more than did the fifth grade teachers, who relied more on individualized materials and reading kits.

- There was little percentage difference between second and fifth grade usage of the ten types of mathematics instructional materials.

- The use of the state adopted reading basal textbook series was associated with second grade pupil growth in application skills.
- The use of the state adopted mathematics basal textbook series at fifth grade was associated with poor pupil performance in computation skills.
- The use of programmed materials was associated with second grade pupil growth in computation and total mathematics skills.

The materials used in reading and mathematics instruction were aggregated somewhat differently to provide the basis for the combined category WD-5. There the number of different kinds of materials used became the index for WD-5.

Teacher Reports of Their Activities and Observations of those Activities

The validity of teacher reports of their activities was explored in comparison to selected observational variables. The validity of teacher reports considered were:

1) Teacher reports about the organization of pupils for reading and mathematics instruction was compared with observed classroom organizational patterns;
2) Teacher reports of time spent teaching specific reading and mathematics skills was compared with observed incidence of positive pupil learning; and,
3) Teacher reports of instructional activities, grouping and materials used was compared with pupil achievement in reading and mathematics.

Our purpose was to determine if reports provided by teachers related to other information obtained in the study.

Observed and Teacher Reported Organization of Pupils for Learning

One of the two observational systems utilized to gather Phase II data was APPLE* (Anecdotal Processing to Promote the Learning Experience), a system in which observers generated a low inference record of teacher and pupil behavior. Among the information observers recorded was a continuous record of instructional contexts in which the sample of target pupils were working during reading and mathematics instruction. In the APPLE System:

> ...The concept of an instructional context defines the relationship of the teacher to the instructional activity of the pupil. There are six major contexts, ranging from the teacher directing the activities of the entire class to an individual student working or playing independently of the teacher's direction and independently of other children in the class. (Volume III, Chapter 1, p. 9)

For the analyses, only those observer descriptions of pupils specifically working in reading or in mathematics contexts were included.

Eight target pupils were identified for observation in each classroom. Pupils and appropriate alternates were selected by comparing teacher rankings of expected pupil performance with the actual fall reading performance on one or more of the Phase II tests. A boy and a girl were selected from the top, from just above the middle, from just below the middle and from the bottom of the distributions in each classroom. The list was also balanced to reflect the ethnic composition in each classroom. The analyses in this section of the report compare the observed activities of that sample of less able, average and above average pupils in each classroom with teacher reported acitvities.

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*APPLE was developed by Nadine Lambert of the University of California, Berkeley. It is described in its application to this project in Chapter One of Volume III of the final report.

Teachers were asked to indicate in the Work Diaries which one organizational pattern most nearly described their current reading program. Their choices were: simultaneous instruction of all pupils, pupils grouped by reading level, pupils grouped by skill needs, individualized instruction and an open-ended "other" category. The four specific organizational patterns reported are compared with the six instructional contexts in which pupils were observed to be working.

The first indicator we have examined of the validity of a teacher's reports of his or her own activities was productive. Observed and teacher reported organization of pupils for learning seems to be consistent to the degree that further research would be warranted to refine systems for teachers to report their own organizational strategies.

An interesting aspect of this analysis was that during reading and mathematics activities at both grade levels adults other than the teacher were observed working in classrooms where children were grouped instructionally for specific skill need. Only about one-third of the second grade teachers and about fifteen percent of the fifth grade teachers did not teach reading and mathematics to all of their pupils themselves. Therefore, we are discussing a relatively small proportion of the teachers. Teachers were not observed (to a degree where significant correlations emerged) teaching groups of pupils in classrooms where they reported grouping by skill level. It appears that teachers who use other adults as instructors frequently assign the major repsonsibility for specific skill instruction to the other teaching adults. We have previously suggested that instruction associated with other teaching adults was consistently and negatively associated with pupil achievement.

Observed Incidence of Specific Kinds of Positive Pupil Learning and Teacher Reported Time Spent Teaching Related Reading and Mathematics Skills

Teachers estimated the amount of time they spent teaching four kinds of reading skills: decoding, vocabulary, comprehension and application. APPLE observers rated, as well as recorded, pupil activities during reading and mathematics instruction. Of the pupil "events" which occurred frequently enough to be included in the APPLE analytical phases of the study, it appeared that two of the reading event categories might relate to two of the Work Diary categories. To test those assumptions the observational evidence of positive pupil performance in the demonstration of phonics skills was compared to the Work Diary reports of the time each teacher spent teaching decoding skills; and, the observed evidence of positive pupil performance in reading comprehension was compared to reports of time spent teaching comprehension skills (Table 18).

The APPLE lexicon definition of a "+ phonics skills" pupil event, for example, is "positive evidence of skill in sounding out new words; knowing the sound connected with letters." If observers had any doubt about the quality of a pupil activity, they were trained to rate it as a "0" or neutral event. Only the "+" or positive incidences of pupil performance were used in this analysis.

The observed incidence of positive pupil performance during mathematics in number concept skills was compared to the two potentially related Work Diary categories, the time reported teaching problem types and the time reported teaching operations (Table 19). At the fifth grade level the correlations do suggest that teacher reported amounts of time spent in direct instruction of specific reading and mathematics skills was related to observed evidence of successful pupil performance in those skill areas.

The second test of the validity of teacher reports was a comparison of the reported time spent teaching specific reading and mathematics skills compared with observed evidence of pupil demonstrations of those skills. The correlations were small and the levels of significance approached the liberal .10 level arbitrarily set by the author as the cut off point for these analyses. Nevertheless, the reports of teachers about time spent teaching specific skills appeared to be reflected in evidence of pupil skills in those areas.

Teacher reports of their instructional activities as they related to pupil skill growth have been discussed in the previous section.

Teacher reports of their instructional activities, procedures and materials have demonstrated their utility and quality in this study. The Phase II teachers who expended so much effort in providing that information should be gratified to know that the results justify their efforts. "Self-reporting" as a reputable form of gathering research information may have gained new lustre as a result of their careful efforts.